

CLAIM PTO

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1.A method for tracing the execution path of a computer program comprising at least one module including a plurality of instructions, at least one of said instructions being a branch instruction, the method comprising the steps of:

Identifying each branch instruction;  
evaluating each branch instruction to be one of true and false; and  
responsive to an evaluation of true, pushing a unique identifier into a  
predefined area of storage, wherein said unique identifier is associated with  
the instructions executed as a result of said evaluation of true.

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2.(Amended) The method of claim 1, further comprising the step of providing said predefined area of storage with volatile memory.

3.(Amended) The method of claim 1, further comprising the step of providing said predefined area of storage with non-volatile memory.

4.(Amended) The method of claim 1, further comprising the step of:  
outputting the contents of said storage area to a file at a predetermined point in  
time.

5.(Amended) The method of claim 4, further comprising the step of:

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outputting trace information to said file upon exit from said at least one module.

6. (Amended) The method of claim 5, further comprising the step of outputting the contents of said storage area at the same time as said exit trace information.

7. (Amended) The method of claim 4, wherein the step of outputting the contents of said storage area further comprises the step of:

determining whether said storage area is full; and  
responsive to a positive determination, outputting said contents to said file.

8. (Amended) The method of claim 4, wherein the step of outputting the contents of said storage area further comprises the step of:

determining whether a failure has occurred within said program; and  
responsive to a positive determination, outputting said contents to said file.

9. The method of claim 4, wherein the step of pushing a unique identifier into

a predefined area of storage further comprises the steps of:

determining whether said predefined area of storage is full; and  
overwriting the first unique identifier in said storage area.

10. (Amended) The method of claim 9, further comprising the step of:

writing the position of the most recent unique identifier to be written out to said storage area to said storage area.

11. (Amended) The method of claim 10, further comprising the step of using said position to determine the number of unique identifiers that have been overwritten prior to being written out to said file.

12. (Amended) The method of claim 11, further comprising the step of:

responsive to determining that a large number of unique identifiers have been overwritten, increasing the size of said predefined area of storage.

13. (Amended) An apparatus for tracing the execution path of a computer program comprising at least one module including a plurality of instructions, at least one of said instructions being a branch instruction, said apparatus comprising:

an identifier for identifying each branch instruction;

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an evaluator for evaluating each branch instruction to be one of true and false;  
and

a pusher, responsive to an evaluation of true, for pushing a unique identifier into  
a predefined area of storage, wherein said unique identifier is associated with the  
instructions executed as a result of said evaluation of true.

14. A method for instrumenting a computer program comprising at least one  
module including a plurality of instructions, at least one of said instructions  
being a branch instruction, each branch instruction being evaluated to be  
one of true and false at run-time, with at least one signature instruction for  
indicating the execution path of said program at run-time, the method

comprising the steps of:  
identifying each branch instruction;  
identifying the instructions associated with an evaluation of true at run-time;  
instrumenting said instructions associated with an evaluation of true with a  
signature instruction, wherein said signature instruction causes a unique  
identifier to be pushed into a predefined area of storage upon execution of  
said true instructions at run-time.

15. (Amended) A compiler for instrumenting a computer program comprising at  
least one module including a plurality of instructions, at least one of said instructions  
being a branch instruction, each branch instruction being evaluated to be one of true  
and false at run-time, with at least one signature instruction for indicating the execution  
path of said program at run-time, said compiler comprising:

a first identifier for identifying each branch instruction;  
a second identifier for identifying the instructions associated with an evaluation of  
true at run-time;  
a pusher for instrumenting said instructions associated with an evaluation of true  
with a signature instruction, wherein said signature instruction causes a unique identifier  
to be pushed into a predefined area of storage upon execution of said true instructions  
at run-time.